

REMARKS

Reconsideration of the present application is respectfully requested.

Again, the indication that claims 4, 6 and 25-27 are objected to is acknowledged with appreciation.

The objection to claims 5, 10 and 16 are believed overcome by amendments to those claims.

The rejection of claim 9 under 35 USC 112 is believed overcome by amending claim 9 to depend from claim 3.

The rejection of claims 1-3, 11, 16, 23, 24, 29 and 30 under 35 USC 102(b) as being anticipated by Dunn et al. is respectfully traversed.

For a prior art reference to anticipate in terms of 35 U.S.C. 102, every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 15 USPQ2d 1566, 1567 (Fed. Cir. 1990).

Claim 1 features the step of modulating the current, in reference to an occurrence of interference in an interface between a head and a surface. Modulating the current, in reference to an occurrence of interference in an interface between a head and a surface is generally exemplified in the specification of the present invention at page 7, lines 11-14 as:

Advantageously, the systems, methods, and apparatus described manage or control the input current to the spindle motor of the mass storage device in a manner that reduces the wear on the head and recording medium, yet provides efficient use of the limited power available to the mass storage device.

That claim 1 feature is further exemplified in the specification of the present invention at page 11, lines 21-23 as:

In block 620, modulating is performed in a manner that reduces the wear on the head and recording medium, yet provides efficient use of the limited power available to the mass storage device.

Further illustration of this feature is disclosed in the specification of the present invention at page 21, lines 4-7, as:

However, when the current is modulated, such as the cessation of the head flying on an air bearing, either during an intermittent bounce off of the disc, or a longer term sliding of the head on the rotating disc, the available torque 1910 modulates during that time.

Therefore, the current is modulated when there is an interference or an anomaly with the air bearing.

Dunn et al. disclose (col. 3, line 67- col. 4, line 2) that the "drag from the read/write heads induces a torque disturbance which is translated into a disk speed error." Dunn et al. go on to describe that this disk speed error is compensated by torque correction value. See col. 4, lines 9-27. Therefore, Dunn et al. disclose an input signal to the power amplifier 17 that includes the torque correction value to compensate for the drag.

"Drag" is defined in Dunn et al. at col. 3, lines 8-26. That definition does not identically disclose an occurrence of interference in an interface between a head and a surface. In fact, one embodiment of the present invention takes into account the drag of the device. See the specification of the present invention at page 14, line 21 to page 15, line 7. Therefore, an occurrence of interference in an interface between a head and a surface does not involve the drag as disclosed in Dunn et al. Since this feature of claim 1 is not identically shown by Dunn et al., claim is not anticipated and is allowable. Claims 2, 3 and 11 are also allowable due to their dependence on allowable claim 1.

Claim 16 features modulating current to the disc in reference to the interference. Claim 23 features a modulator that modulates current to the spindle motor in a manner that avoids anomalies in the performance of the mass storage device thereby reducing wear on a head and the recording medium. Claim 29 features to modulate a current directed to the spindle motor, to reduce interference in an interface between the head and the rotatable recording medium. For similar reasons to those explained for claim 1, Dunn et al. do not identically disclose this feature. Thus, claims 16, 23 and 29 are not anticipated and are allowable. Dependent claims 24 and 30 are also allowable due to their respective dependence on allowable independent claims.

The rejection of claims 12 and 28 under 35 USC 102(e) as being anticipated by Oida is respectfully traversed.

Claims 12 and 28 feature the data including the quantity of current applied to the spindle motor. The Office Action states that reference number 3 in Fig. 1 is a spindle motor. If that is the case, nowhere does Oida disclose the control of reference number 3. Fig. 2, disclosed as "a block diagram of a control system of an embodiment of the present invention" does not show a spindle motor. Oida nowhere discloses in detail how the spindle motor is controlled. Thus, there is necessarily no disclosure about data including the quantity of current applied to the spindle

motor. The associated disclosure for that figure describes controlling the actuator system 25. Therefore, Oida does not identically disclose this feature. As such, claims 12 and 28 are not anticipated and are allowable.

The rejection of claims 7 and 8 under 103(a) as being unpatentable over Dunn et al. in view of Smith is respectfully traversed.

First, the Office Action is incorrect in stating that takeoff air-bearing instability occurs at the beginning of a seek operation. Neither Dunn et al. or Smith teach or suggest that. Therefore, there is no objective evidence of record to support that statement. In addition, pursuant to 37 CFR 104(d)(2), an affidavit is requested to support this statement.

Second, Dunn et al. only disclose compensating for drag. Smith disclose monitoring certain drive parameters for failure. Nowhere do either references, alone or together, teach or suggest using those parameters to compensate anything. Since there is no such teaching or suggestion, the motivation to combine these references must have been provided from the present invention. Such hindsight is impermissible. As a result, claims 7 and 8 are not obvious, and therefore allowable, because there is no motivation to combine the applied references.

The rejection of claim 10 under 103(a) as being unpatentable over Dunn et al. in view of Ogino is respectfully traversed. Ogino, as shown by the cited portion of that reference in the Office Action, discloses compensation for vibration of a two-stage actuator during starting and stopping. Ogino does disclose spindle motor eccentricity, but does not disclose controlling the spindle motor in a compensatory manner. Nor does Ogino discuss the starting or stopping of the spindle motor. Since the applied references, alone or in combination, neither teach or suggest the feature of modulating the current during spin-down of the mass storage device, claim 10 is not obvious. As such, claim 10 is allowable.

The rejection of claims 11 and 30 under 35 USC 103(a) as being unpatentable over Dunn et al. in view of Okada et al. is respectfully traversed.

Claim 11 features increasing the current, in reference to the occurrence of interference in the interface between the head and the surface. Claim 30 features to increase a current directed to the spindle motor, to reduce interference in the interface between the head and the rotatable recording medium.

Dunn et al. do not teach these features. Okada et al. disclose increasing the current volume to the stepper motor in response to detecting vibration. The stepper motor is not a

spindle motor (a feature derived from claim 29). Second, Dunn et al. and Okada et al. neither teach or suggest, alone or in combination, that a vibration "inside or outside the disk apparatus" is understood to one skilled in the art to encompass interference in the interface between the head and the surface (claim 11) or interference in the interface between the head and the rotatable recording medium (claim 30). Pursuant to 37 CFR 104(d)(2), an affidavit is requested to support this contention.

Since there is no such teaching or suggestion, the motivation to combine these references must have been provided from the present invention, which is impermissible hindsight. As a result, claims 11 and 30 are not obvious, and therefore allowable, because there is no motivation to combine the applied references.

The rejection of claims 13 and 14 under 35 USC 103(a) as being unpatentable over Oida in view of Smith is respectfully traversed.

As discussed above for claim 12, Oida does not teach the quantity of current applied to the spindle motor at a plurality of discrete points in time. Nor does Oida suggest such a feature. Smith does not overcome that discrepancy. The combination of both these references also do not teach or suggest that feature. Therefore, claim 12 is not obvious and is allowable. As a result, claims 13 and 14 are also allowable due to their dependence on allowable claim 12.

The rejection of claim 15 under 35 USC 103(a) as being unpatentable over Oida in view of Dunn et al. is respectfully traversed. As explained immediately above, Oida does not teach or suggest the claim 12 feature of the quantity of current applied to the spindle motor at a plurality of discrete points in time. Dunn et al. does not overcome that deficiency, either alone or in combination with Oida. Therefore, claim 12 is not obvious and is allowable. As a result, claim 15 is also allowable due to its dependence on allowable claim 12.

The rejection of claim 17 under 35 USC 103(a) as being unpatentable over Dunn et al. in view of Oida is respectfully traversed.

Dunn et al. neither teach nor suggest the claim 16 feature of determining interference between a head and a storage medium of the storage device. Oida mentions nothing about this type of interference. Therefore, these references, alone or in combination, do not teach or suggest this claim 16 feature. As a result, claim 16 is not obvious and is allowable over these references. Claim 17 is likewise allowable due to its dependence on claim 16.

The rejection of claims 18-22 under 35 USC 103(a) as being unpatentable over Dunn et al. in view of Yamashita et al. is respectfully traversed.

Dunn et al. neither teach nor suggest the claim 16 feature of determining interference between a head and a storage medium of the storage device. Yamashita et al., alone or in combination with Dunn et al., teach or suggest that claim 16 feature. As a result, claim 16 is not obvious and is allowable over these references. Claims 18-22 are also allowable due to their dependence on claim 16.

Having explained above that claims 1-30 are not anticipated by or obvious in view of the applied references, the examiner is respectfully requested to allow claims 1-30 and pass this case to issuance.

Date: 5/10/04

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